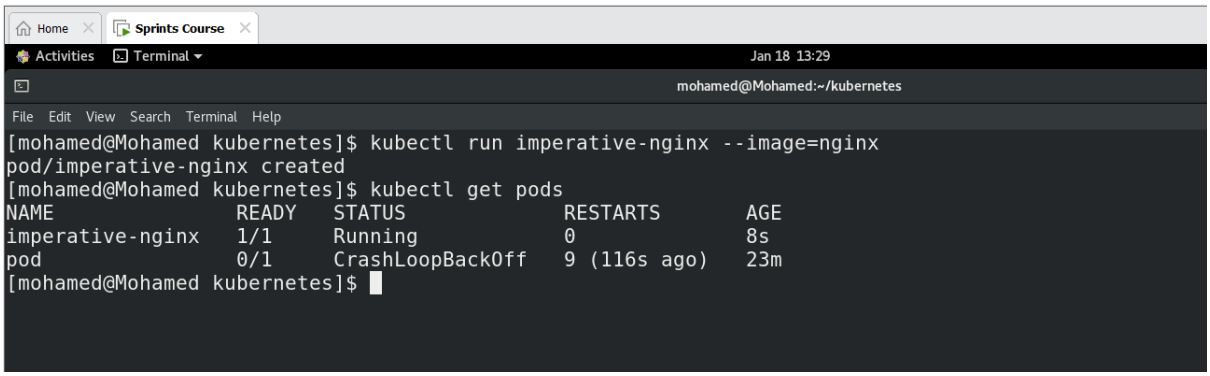
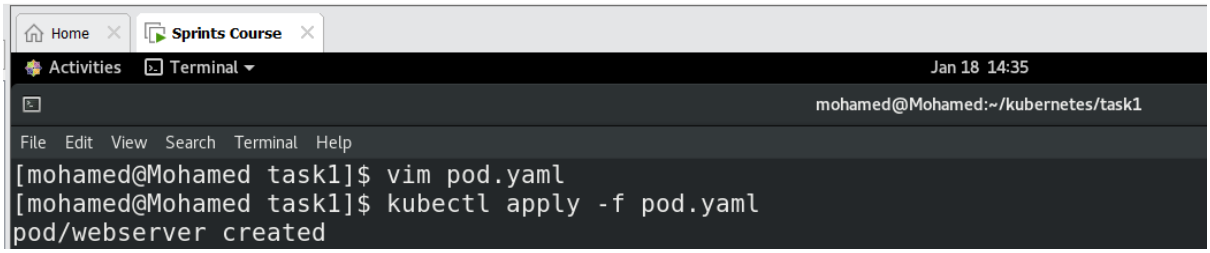
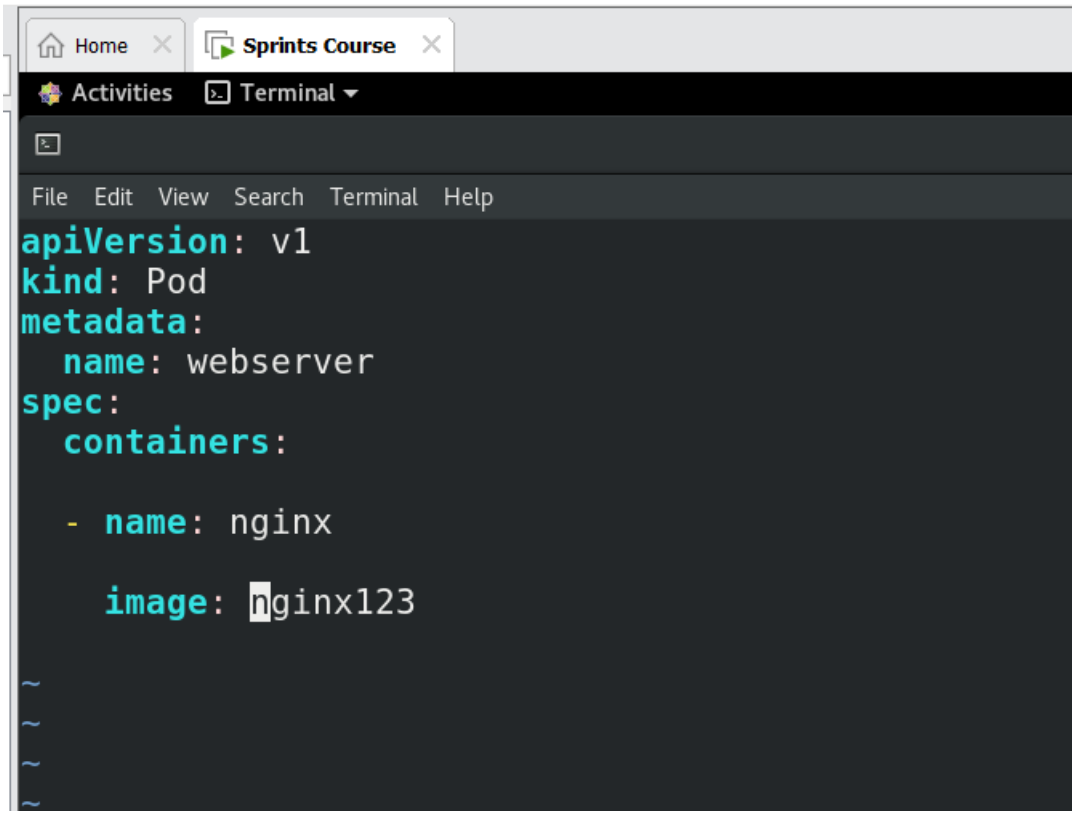
Kubernetes Lab 1

1) Create a pod with the name “imperative-nginx” and with the image nginx and latest tag. using Imperative command (not yaml).



2) Create a pod with the name webserver and with the image “nginx123” Use a pod-definition YAML file.

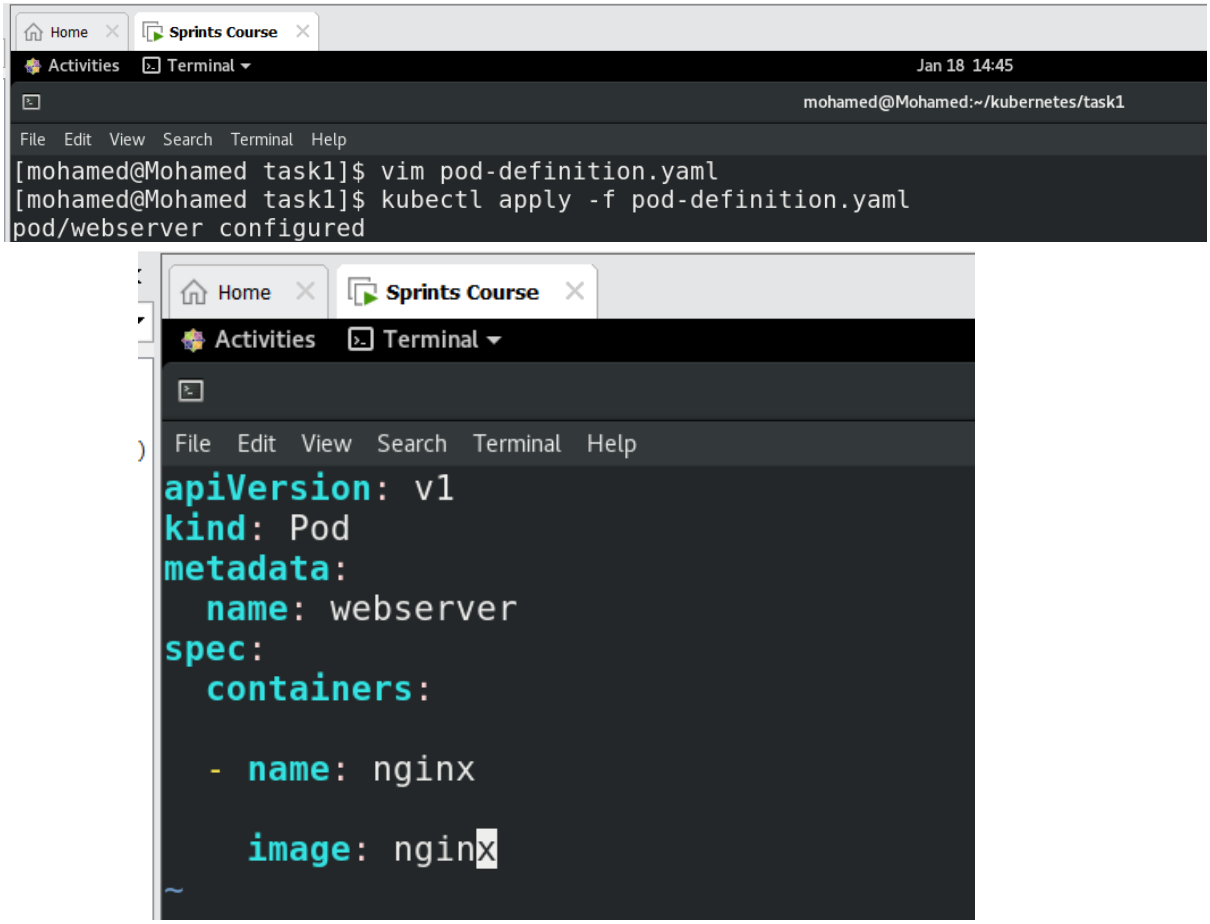




3) What is the nginx pod status?

```
[mohamed@Mohamed task1]$ kubectl get pods
NAME               READY   STATUS         RESTARTS   AGE
imperative-nginx   1/1     Running        0          66m
webserver          0/1     ErrImagePull   0          3s
[mohamed@Mohamed task1]$
```

4) Change the nginx pod image to “nginx” check the status again



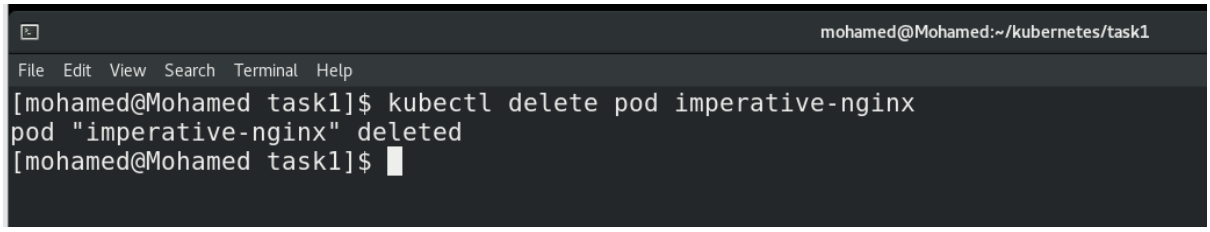
5) How many pods are running in the system? Type the command to show this

```
[mohamed@Mohamed task1]$ kubectl get pods
NAME               READY   STATUS    RESTARTS   AGE
imperative-nginx   1/1     Running   0          76m
webserver          1/1     Running   0          10m
[mohamed@Mohamed task1]$
```

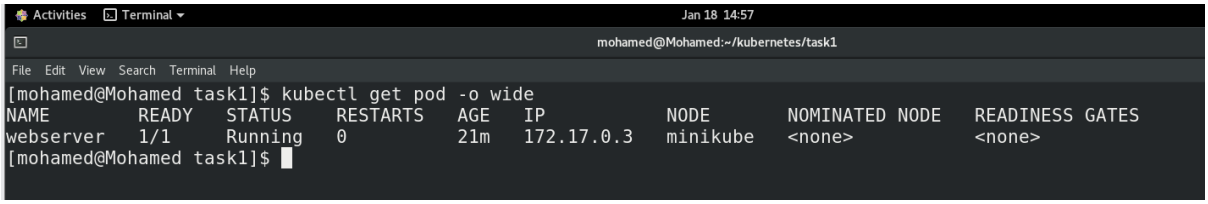
6) What does READY column in the output of get pods command indicate?

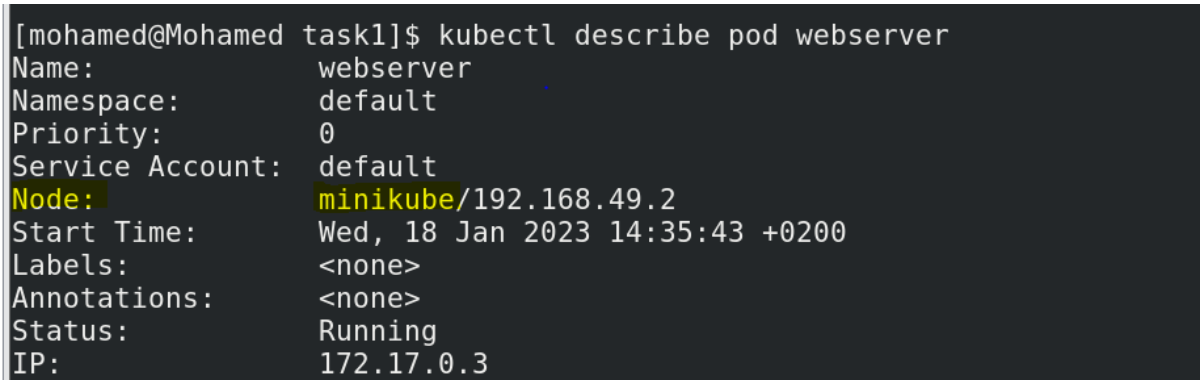
>> It shows how many containers in a pod are considered ready.

7) Delete first pod named imperative-nginx you just created. Type the command to do this

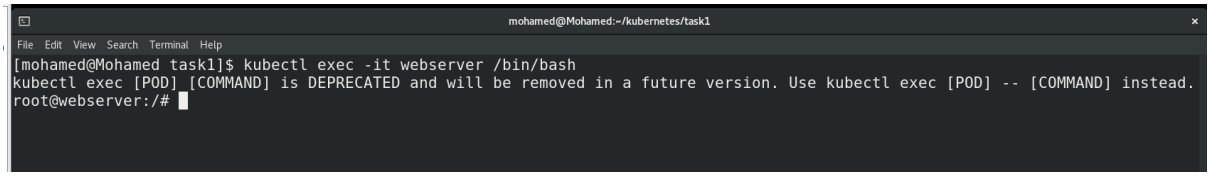


8) Which node is pod named webserver running on (list two commands to do this)

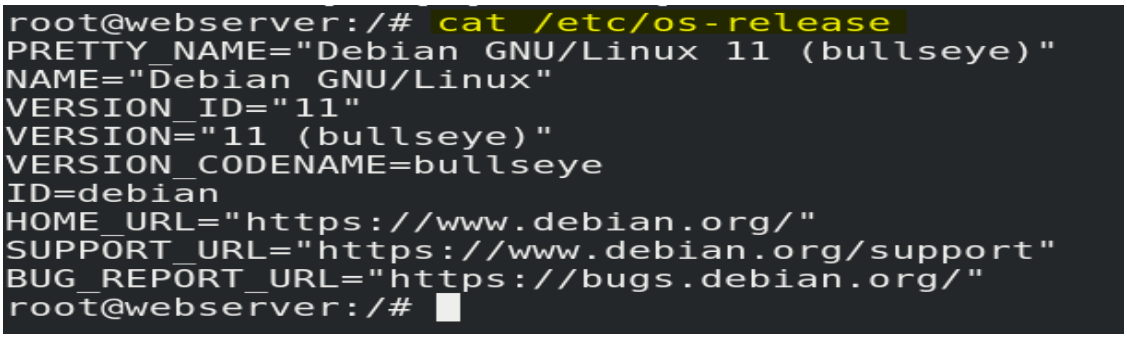




9) Get a shell to the running container i.e. ssh into it (figure out the command)



10) Run cat /etc/os-release inside the container



11) Exit from the shell (/bin/bash) session

```
root@webserver:/# exit
exit
[mohamed@Mohamed task1]$
```

12) Get logs of pod, what are logs and what they are used for?

>> Application logs can help you understand what is happening inside your application. The logs are particularly useful for debugging problems and monitoring cluster activity.

```
File  Edit  View  Search  Terminal  Help
[mohamed@Mohamed task1]$ kubectl logs webserver
/docker-entrypoint.sh: /docker-entrypoint.d/ is not empty, will attempt to perform configuration
/docker-entrypoint.sh: Looking for shell scripts in /docker-entrypoint.d/
/docker-entrypoint.sh: Launching /docker-entrypoint.d/10-listen-on-ipv6-by-default.sh
10-listen-on-ipv6-by-default.sh: info: Getting the checksum of /etc/nginx/conf.d/default.conf
10-listen-on-ipv6-by-default.sh: info: Enabled listen on IPv6 in /etc/nginx/conf.d/default.conf
/docker-entrypoint.sh: Launching /docker-entrypoint.d/20-envsubst-on-templates.sh
/docker-entrypoint.sh: Launching /docker-entrypoint.d/30-tune-worker-processes.sh
/docker-entrypoint.sh: Configuration complete; ready for start up
2023/01/18 12:44:54 [notice] 1#1: using the "epoll" event method
2023/01/18 12:44:54 [notice] 1#1: nginx/1.23.3
2023/01/18 12:44:54 [notice] 1#1: built by gcc 10.2.1 20210110 (Debian 10.2.1-6)
2023/01/18 12:44:54 [notice] 1#1: OS: Linux 4.18.0-408.el8.x86_64
2023/01/18 12:44:54 [notice] 1#1: getrlimit(RLIMIT_NOFILE): 1048576:1048576
2023/01/18 12:44:54 [notice] 1#1: start worker processes
2023/01/18 12:44:54 [notice] 1#1: start worker process 29
2023/01/18 12:44:54 [notice] 1#1: start worker process 30
[mohamed@Mohamed task1]$
```

13) How many ReplicaSets exist on the system?

```
File  Edit  View  Search  Terminal  Help
[mohamed@Mohamed task1]$ kubectl get replicaset
No resources found in default namespace.
[mohamed@Mohamed task1]$
```

14) create a ReplicaSet with name= replica-set-1 / image= busybox / replicas= 3

```
mohamed@Mohamed:~/kubernetes/task1
File  Edit  View  Search  Terminal  Help
[mohamed@Mohamed task1]$ vim replicaset.yaml
[mohamed@Mohamed task1]$  kubectl apply -f replicaset.yaml
replicaset.apps/replica-set-1 created
[mohamed@Mohamed task1]$ kubectl get rs
NAME            DESIRED   CURRENT   READY   AGE
replica-set-1   3         3         3       87s
[mohamed@Mohamed task1]$ kubectl get pods
NAME                  READY   STATUS    RESTARTS        AGE
replica-set-1-db6jg   1/1     Running   0               93s
replica-set-1-qvx4t   1/1     Running   0               93s
replica-set-1-vt5ht   1/1     Running   0               93s
webserver             1/1     Running   1 (6h16m ago)   7h26m
[mohamed@Mohamed task1]$
```

```
File  Edit  View  Search  Terminal  Help
apiVersion: apps/v1
kind: ReplicaSet
metadata:
  name: replica-set-1
  labels:
    app: guestbook
    tier: frontend
spec:
  replicas: 3
  selector:
    matchLabels:
      tier: frontend
  template:
    metadata:
      labels:
        tier: frontend
    spec:
      containers:
      - name: busybox
        image: busybox
        command: ["/bin/sh"]
        args: ["-c", "sleep 1000"]
~
```

15) Scale the ReplicaSet replica-set-1 to 5 PODs

```
[mohamed@Mohamed task1]$ kubectl scale --replicas=5 -f replicaset.yaml
replicaset.apps/replica-set-1 scaled
```

16) How many PODs are READY in the replica-set-1?

```
[mohamed@Mohamed task1]$ kubectl get pods
NAME                READY   STATUS    RESTARTS        AGE
replica-set-1-7zhrx   1/1     Running   0               12s
replica-set-1-db6jg   1/1     Running   0               4m6s
replica-set-1-qvx4t   1/1     Running   0               4m6s
replica-set-1-rvwwv   1/1     Running   0               12s
replica-set-1-vt5ht   1/1     Running   0               4m6s
webserver           1/1     Running   1 (6h19m ago)   7h29m
[mohamed@Mohamed task1]$
```

17) Delete any one of the 5 PODs then check How many PODs exist now? Why are there still 5 PODs, even after you deleted one

>>A ReplicaSet's purpose is to maintain a stable set of replica Pods running at any given time even after deleting. As such, it is often used to guarantee the availability of a specified number of identical Pods.

```
[mohamed@Mohamed task1]$ kubectl get pods
NAME                  READY   STATUS    RESTARTS        AGE
replica-set-1-7zhrx   1/1     Running   0               45s
replica-set-1-db6jg   1/1     Running   0               4m39s
replica-set-1-qvx4t   1/1     Running   0               4m39s
replica-set-1-rvwwv   1/1     Running   0               45s
replica-set-1-vt5ht   1/1     Running   0               4m39s
webserver             1/1     Running   1 (6h19m ago)   7h29m
[mohamed@Mohamed task1]$ kubectl delete pod replica-set-1-7zhrx
pod "replica-set-1-7zhrx" deleted
[mohamed@Mohamed task1]$ kubectl get pods
NAME                  READY   STATUS    RESTARTS        AGE
replica-set-1-db6jg   1/1     Running   0               13m
replica-set-1-qvx4t   1/1     Running   0               13m
replica-set-1-rvwwv   1/1     Running   0               9m16s
replica-set-1-vt5ht   1/1     Running   0               13m
replica-set-1-zgv4k   1/1     Running   0               88s
webserver             1/1     Running   1 (6h28m ago)   7h38m
[mohamed@Mohamed task1]$
```